PROJECT REPORT

ON

"Medicine Recommendation System"

COMPUTER ENGINEERING

INTERNSHIP

(315004)

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Certificate

This is to certify that Ms.＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿. Roll No. ＿of Fifth Semester Of Diploma in Computer Engineering of Institute, Government Polytechnic Thane(code.0116) has completed the term work satisfactorily in Course **Internship** (315004) for the academic year **2025 to 2026** as Prescribed in the curriculum

Place:Thane   Enrollment No:…………...
Date:…………..   Exam.Seat No:……………

Mentor   **Principal**   **Head Of The Department**

Abstract

Industrial training is an important phase of a student life. A well planned, properly executed and evaluated industrial training helps a lot in developing a professional attitude. It develops an awareness of industrial approach to problem solving, based on a broad understanding of process and mode of operation of organization.

The aim and motivation of this industrial training is to receive discipline, skills, teamwork and technical knowledge through a proper training environment, which will help me, as a student in the field of Information Technology, to develop a responsiveness of the self-disciplinary nature of problems in information and communication technology.

The rapid growth of digital libraries and online platforms has increased the need for intelligent recommendation systems to assist readers in finding relevant books.

This project presents a Book Recommendation System based on a Hybrid approach, which integrates both content-based filtering and collaborative filtering techniques to improve accuracy and personalization. Content-based filtering analyses the attributes of books such as genre, author, and description, while collaborative filtering leverages user behaviour and preferences to generate recommendations.

By combining these methods, the system overcomes limitations such as the cold-start problem and lack of diversity in suggestions.

The proposed hybrid model ensures more precise, scalable, and user-centric recommendations, thereby enhancing the overall reading experience and user satisfaction.

Throughout this industrial training, I have been learned new programming language that required for the system, the process of the production lines and able to implement what I have learnt for the past year as a Diploma in Computer Engineering student in Government Polytechnic, Thane.

Acknowledgement

I extend my heartfelt gratitude to everyone who supported me throughout this project. I'm deeply thankful to my project guides Mr. Shreyansh Jain Sir and Mr.Ruturaj Chavan Sir and faculty members for their invaluable guidance, encouragement, and constructive feedback.

I appreciate the insights and suggestions from my peers and friends, which helped refine my ideas. I'm grateful to my family for their constant motivation, patience, and moral support.

I also acknowledge the learning resources, research papers, and online platforms that provided essential knowledge and tools, enabling me to complete this project successfully. Their collective support made this project possible, and I'm truly thankful for their contributions

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Learning objectives/internship objectives

Internships are generally thought of to be reserved for college students looking to gain experience in a particular field. However, a wide array of people can benefit from Training Internships in order to receive real world experience and develop their skills.

An objective for this position should emphasize the skills you already possess in the area and your interest in learning more.

Internships are utilized in a number of different career fields, including architecture, engineering, healthcare, economics, advertising and many more.

Some internship is used to allow individuals to perform scientific research while others are specifically designed to allow people to gain first-hand experience working.

Utilizing internships is a great way to build your resume and develop skills that can be emphasized in your resume for future jobs. When you are applying for a Training Internship, make sure to highlight any special skills or talents that can make you stand apart from the rest of the applicants so that you have an improved chance of landing the position.

Report on project

Project Report :
Design a Medicine Recommendation System using Python with Data Science
Machine Learning.

Introduction :
In today's healthcare system, patients often face challenges in finding the
right medicines for their health conditions. With the vast number of
medicines available, it becomes difficult to identify the most effective
options without professional guidance. To address this issue, a Medicine
Recommendation System has been developed that automatically suggests
medicines to users based on disease symptoms, popularity, and content
similarity.

Project Objectives :
1. To build a system that recommends medicines tailored to patient symptoms.

2. To provide two types of recommendations – popular medicines and similar medicines.

3. To create an easy-to-use web application with an intuitive and attractive user interface.

4. To implement an efficient content-based recommendation model using TF-IDF and cosine
   similarity.

5. To deploy the system so it can be accessed easily on the web.

Features :
- Popularity-based recommendation – Displays the top recommended medicines based on ratings,
  prescriptions, and effectiveness.

- Content-based recommendation – Suggests medicines similar to a given medicine or based on
  symptom keywords.

- Interactive frontend – Built using HTML, CSS, Bootstrap, and FontAwesome for responsiveness.

- Flask-based backend – Handles routes, loads models, and processes user input.

- Pre-trained models .pkl) – Fast loading of popularity and content-based models.

- Scalable design – Can be extended for personalized medicine recommendations in the future.

Methodology :

1. Data Collection & Cleaning

Dataset of medicines, descriptions, symptoms, and reviews was processed.

Irrelevant and missing values were handled.

2. Model Building

Popularity Model:

Selected medicines with the highest prescriptions and reviews.

Content-Based Model:

Used TF-IDF vectorizer on medicine descriptions and symptoms.

Calculated cosine similarity between vectors to find similar medicines.

Models were saved as pickle files for reuse.

3. Backend Development (Flask)

Implemented routes for home, popular medicines, and recommendations.

Loaded models (popularity_model.pkl and content_model.pkl).

Integrated Jinja2 templates to render results dynamically.

4. Frontend Development

Designed using Bootstrap grid system for responsiveness.

Added background images, gradients, and fixed navbar for aesthetics.

Displayed results in Bootstrap cards with medicine details.

5. Integration

Connected Flask backend with frontend templates.

Core Functions :

get_recommendations(query_medicine, top_k=5)

Takes a medicine name or symptom → Finds cosine similarity → Returns top similar medicines.

2. Flask Routes (app.py):

/ → Homepage

/popular_medicines → Loads and displays top recommended medicines.

/similar_medicines → Accepts a medicine name → Returns similar medicines.

/symptom_based → Accepts symptom keywords → Returns medicine suggestions.

3. Template Rendering:

Uses Jinja2 to pass medicine data (name, usage, side effects, rating, image) into Bootstrap.

Main Concepts Used :
The core concept is Content-Based Filtering using TF-IDF (Term Frequency – Inverse Document Frequency) and Cosine Similarity:

- TF-IDF converts book descriptions into numerical vectors by measuring word importance.

- Cosine similarity measures the angle between vectors to find how close two books are in terms of content.

- This allows the system to recommend books with similar themes, authors, or genres to the one a user link.

Conclusion :

The Medicine Recommendation System successfully combines machine learning with web development to provide an efficient, user-friendly platform for patients and healthcare seekers. By integrating popularity-based and content-based approaches, it ensures users receive both highly recommended medicines and personalized suggestions.

With further improvements like collaborative filtering and user login systems, this project can evolve into a full-fledged personalized healthcare recommendation engine, similar to what online health platforms and e-pharmacies use today.

Result :